CONDITIONAL MATE CHOICE STRATEGIES IN HUMANS: EVIDENCE FROM 'LONELY HEARTS' ADVERTISEMENTS

by

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(With 10 Figures)
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Summary

Advertisements from 'Lonely Hearts' columns in four US newspapers are used to test hypotheses about mate preferences by male and female humans. We first confirm conventional findings that, in general, men prefer young women whose reproductive value is high while women prefer men who are slightly older than themselves, that women seek resources while men seek physical attractiveness and that women are more choosy than men. We then go on to test a series of predictions derived from the hypothesis that an individual's preferences in these respects are likely to be contingent on what he/she has to offer. We show that women tend to become less demanding as they age (probably because reproductive value declines with age), whereas males become more demanding (probably because resources increase with age), that women (but not men) offering cues of physical attractiveness make higher demands than those that do not, that men (but not women) offering resources make higher demands than those that do not, that men with few resources to offer attempt to offset this disadvantage by offering cues of family commitment, that men and women with dependent offspring make lower demands than those without and that individuals from higher socio-economic groups (who are likely to have more resources to offer) make more demands than those from lower socio-economic groups.

Introduction

Bateman's Principle suggests that, when investment in the non-sharable costs of reproduction by the two sexes differs, the sex with the larger investment should be more choosy in its demands from prospective mating partners. In mammals, the time and energy costs of gestation and lactation place a significant unavoidable burden on the female; with

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females predisposed to be choosy, males are freed to invest more in structures and behaviours that enhance mating opportunities. This process is seen at its most extreme form in the mating systems of many ungulates where males devote themselves singlemindedly to mating and offer no parental care (*e.g.* goats: DUNBAR *et al.*, 1990; hartebeest: GOSLING, 1974; red deer: CLUTTON-BROCK *et al.*, 1982).

In humans, the costs of rearing generated by the need to produce an unusually large-brained offspring are likely to impose greater demands on males to provide parental care for the offspring of the female(s) with whom they have mated. If so, then females may be expected to prefer males who are capable of investing in them and their offspring; in many societies, the ability to invest will often be a direct function of wealth (*e.g.* BORGERHOF MULDER, 1989; VOLAND & ENGEL, 1990). This may predispose females to prefer males who are older than themselves since wealth tends to accumulate with age. However, we might anticipate that this effect will be modified by the fact that the increased mortality of old males will make them less attractive in those societies where continued support by a husband is required throughout the period when a woman has dependent offspring. Hence, at any given age, women's preferences might be hump-shaped with respect to male age, with a downturn in those age-classes where male mortality is likely to leave the woman without support during the later stages of her reproductive lifespan. Males, on the other hand, should always prefer younger females to older ones because younger ones have higher reproductive value (and so can be expected to provide more future offspring). In addition, males (but not females) are likely to suffer serious fitness costs from cuckoldry and this should result in men (but not women) making stringent demands for cues of sexual fidelity (*e.g.* virginity in brides, seclusion of women, *etc.*, see DICKEMANN, 1979, 1981). Women would, however, be expected to demand sexual fidelity when the male's provisioning/parenting abilities are sufficient only for a single family.

There is considerable evidence from cross-cultural studies of mate preferences (*e.g.* BUSS, 1989) that women do in general place a greater emphasis on the status and wealth (or at least earning potential) of prospective mates than men do, while men place a greater emphasis on the sexual fidelity as well as physical attractiveness of spouses (the latter apparently acting as a cue of age, and hence fecundity). Women tend to

prefer prospective husbands that are slightly older than themselves, whereas men often prefer wives that are substantially younger than they are (with the preferred age difference increasing as they age). These results have been widely confirmed in studies of, for example, bridewealth payments in traditional African societies (BORGERHOFF MULDER, 1988), marriage patterns in pre-industrial European societies (VOLAND & ENGEL, 1990) and analyses of advertisements in personal columns in the USA, Europe and India (HARRISON & SAEED, 1977; CAMERON *et al.*, 1977; BOLIG *et al.*, 1984; KENRICK & KEEFE, 1992; THIESSEN *et al.*, 1993; WIEDERMAN, 1993; GREENLESS & MCGREW, 1994).

Although these findings may in general be true, evolutionary theory would lead us to anticipate that expressed preferences will often be conditional strategies. Individuals who have more to offer would be expected to place higher demands on the qualities expected of prospective mates than those who have less to offer, and so to strike harder bargains in mate choice. Since wealth accumulation is a direct function of age in most agricultural and industrial societies, this may be translated into an age-related effect in males: older males will demand more than younger males, who in turn may attempt to offset their lower attractiveness by offering alternative inducements (*e.g.* by expressing greater willingness to share in parenting or to accept children from previous relationships). Similarly, younger females near their peak in reproductive value have more to offer and may therefore be expected to make higher demands on the qualities they expect in their mates, whereas older females, who have less bargaining power, may be more prepared to settle for poorer quality males. One consequence of this is that the two sexes' respective patterns of offers and demands will be mirror images of each other with respect to age.

One factor that may be expected to weigh especially heavily in an individual's decision is whether a prospective mate has dependent offspring from a previous relationship. The fitness consequences of engaging in genetic altruism by rearing another individual's children should make both men and women less willing to consider individuals who have dependent offspring. There is considerable evidence from traditional societies to suggest that this is the case. BORGERHOFF MULDER (1988), for example, found that significantly less bridewealth was paid for Kipsigis women who would be bringing a child into a marriage than for those who

were not. Similarly, studies of seventeenth and eighteenth century marriage patterns in a north German rural community revealed that a young widow's chances of remarrying were directly related to whether or not the offspring from her previous marriage survived (VOLAND, 1988). Among the Ache, males commonly kill the younger children of men who have died or left the group on the grounds that they are unwilling to provide for other men's children (HILL & KAPLAN, 1988).

In this paper, we use 'Lonely Hearts' (or personal) advertisements published in newspapers as a source of easily quantified data on human mate choice aspirations. Advertisements are particularly interesting because they represent the writer's initial (or ideal) bid in what is often a very long drawn out process of negotiation. The vagaries of real life and the local availability of preferred mates will often force mate-seekers to compromise on their ideals. Actual marriage partners, by contrast, represent the choices made after these compromises have been made and may thus tell us little about mate preferences.

Evolutionary theory would lead us to make a number of specific predictions about preferred mating partners. Our primary interest lies in the extent to which personal circumstances cause individuals to modify their preferences. However, we first test a set of more conventional hypotheses concerning universal patterns that provide the background against which contingent strategies emerge. These tests will also provide a check that our sample is not in any significant way atypical of normal human behaviour as revealed by other studies of human mate preferences. The preliminary hypotheses are: (A1) that males prefer younger women and woman prefer slightly older men, (A2) that women seek men with resources while men advertise resources, that men seek cues of (A3) physical attractiveness and (A4) sexual fidelity in a partner more often than women do, (A5) that men (in particular) will indicate that they are unwilling to accept offspring from previous relationships, and (A6) that women seek more qualities in their partners (*i.e.* are more choosy) than men do, while men advertise more qualities than women.

We then go on to test the more complex conditional hypotheses: (B1) that women will become less demanding in the number of qualities sought as they age, while men become more demanding, (B2) that financially independent women will seek resources less often than the average (on the grounds that they may be less dependent on men for resources), (B3) that

women (but not men) offering physical attractiveness will make higher demands than women who do not, (B4) that men (but not women) offering resources will make higher demands than men who do not, (B5) that individuals from higher (*i.e.* wealthier) socio-economic classes will seek more qualities on average than those from lower socio-economic classes and (B6) that individuals with dependent offspring will be less demanding than those without.

Methods

Sources.

Personal advertisements were collated from two publications (*The Sun* and *The Examiner*) that are widely distributed throughout the USA and Canada and from two publications (*Nickel Ads*, *Willamette Week*) distributed locally around Portland (Oregon) and its suburbs. The two national newspapers and the Portland *Nickel Ads* are weekly tabloids whose readership is largely conservative, poorly educated and working class. The two national newspapers specialise in sensational journalism, while *Nickel Ads* specialises in advertisements for secondhand goods; but all three carry significant 'lonely hearts' columns. The other Portland paper, *Willamette Week*, appeals to a more middle-class, wealthier, better educated, progressive, liberal readership.

Procedure.

Advertisements in the personal columns were first sorted in order to remove duplicates (mostly repeat advertisements in successive weeks), advertisers that did not specify their age and those that were clearly only interested in short-term relationships. The remaining sample of 479 advertisements by males (162 from *Willamette Week*, 254 from *Sun/Examiner* and 63 from *Nickel Ads*) and 402 by women (105 from *Willamette Week*, 245 from *Sun/Examiner* and 52 from *Nickel Ads*) were then sorted into 10-year age classes by advertiser and scored for the frequency with which they mentioned key terms relating to the following traits being offered or demanded. The following trait categorisation was based partly on examination of the traits used in advertisements and partly on Buss (1989). Subsequent studies have tended to use similar classifications; moreover, the validity of these classifications has been given support by word content analyses (see Thiessen *et al.*, 1993).

Physical attractiveness: relevant traits include athletic, attractive, cute, fit, good-looking, healthy, nice body (for both sexes); handsome, hunk, muscular, rugged, tall, well-built (for males); or buxom, petite, pretty, shapely, slender, slim (for females). From an evolutionary viewpoint, such terms when used of women are suggestive of both youthfulness, vitality and an ideal body-shape (all of which are correlated with fecundity: see Singh, 1993).

Wealth/status: any terms indicating home-ownership, professional status, being well-off, a business-owner or college-educated, as well as any terms suggestive of an above-average lifestyle. These terms are taken to imply that the individual has (or may expect to have) resources that can be invested in rearing a family.

Family committment: relevent terms include kind, understanding, emotionally stable, mature, dependable, pleasing disposition, likes/wants children, good cook/housekeeper (based on the list produced by Buss, 1989); plus, in addition, giving, caring, family-minded or gentle.

Sexual fidelity: A measure of the demand for, or willingness to accept, a strictly monogamous relationship as a cue for paternity certainty, including the terms monogamous, faithful, one-man-woman, one-woman-man.

Tolerance of children: A note was made of whether or not the advertiser was willing to accept a partner with dependents.

Age requirements: Advertisers tend to specify only a range of ages within which they are prepared to consider prospective partners. The required age was therefore expressed as the absolute difference between the advertiser's age and the median age sought in the partner. Thus, if a 28-year-old advertiser sought a partner aged 21-30, the age requirement would be -2.5.

Traits offered/sought: The total number of traits offered or sought in an advertisement was determined by adding up all the terms listed above. Thus, the following advertisement:

> "DWF [= divorced white female] 42, attractive, slim, fit would like to meet S/DWM [= single or divorced white male] 38-48, handsome, professional, home-owner, *non-smoker, college-educated, financially stable, good values, *no drugs or drink"

would score 3 for the total number of traits offered and 6 for the number of traits sought. The starred items (*) and others like them were not scored since their interpretation remains unclear at present.

Results

Universal patterns (predictions A1-A6).

Figure 1 shows that women tend to seek partners that are slightly older than themselves, whereas men tend to seek partners that are younger than themselves, thereby confirming prediction (A1). In both cases, there is an effect due to age, but the effect is very much more marked in males than in females. The mean values are very similar to those obtained by KENRICK & KEEFE (1992) from analyses of personal ads from Arizona (USA), Holland, Germany and India. Men seem to seek women who are still within their reproductively active period. Table 1 shows that, overall, women sought resources significantly more often than men did (χ^2 =

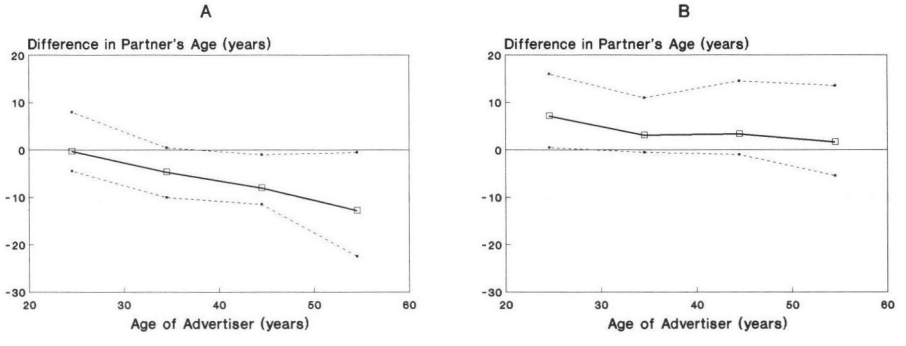

Fig. 1. Mean minimum and maximum ages specified by individuals of a given age range for (a) men and (b) women. The overall mean preferred age in each case is indicated by the solid line, the maxima and minima at each age by the upper and lower broken lines. There were insufficient data on age preferences in the oldest age group (60-69 years) to warrant their inclusion in this analysis. Source: *Willamette Week, Sun, Examiner, Nickel Ads.*

TABLE 1. Frequency with which men and women mentioned resources in their advertisements

	Percentage of advertisers:			
	Offering resources		Seeking resources	
	Men	Women	Men	Women
Willamette Week	48.1	45.4	6.8	17.1
Sun/Examiner	43.7	15.5	2.8	20.4
Nickel Ads	17.2	19.2	1.6	9.6
Overall	41.7	24.5	4.0	18.2
Sample size	480	416	479	402

47.01, df = 1, $p < 0.001$), and that men offered resources more often than women did ($\chi^2 = 29.30$, df = 1, $p < 0.001$), confirming prediction (A2). Similarly, Table 2 shows that men sought cues of physical attractiveness in their partners significantly more often than women did ($\chi^2 = 46.89$, df = 1, $p < 0.001$), while women offered them more often than men did ($\chi^2 = 23.43$, df = 1, $p < 0.001$), confirming prediction (A3).

In contrast, there was little evidence to support prediction (A4): neither men nor women advertisers expressed great concern over the sexual loyalty of their partners (Table 3: overall, only 4% of men and 6% of women sought monogamy in a partner, while only 3% offered it), suggesting that the risk of cuckoldry was not a major consideration (at least at this early stage in the process of pair-formation).

Only 65 advertisements by men (17.2%) and 5 advertisements by women (1.2%) mentioned offspring from a previous relationship. Of these, 27 men (41.5%) refused to accept other men's children (or placed a limit on the number of such children they would tolerate), while only one woman (20%) did so (Table 4). As suggested by prediction (A5), men were significantly more likely than women to refuse to accept offspring from a previous relationship ($\chi^2 = 27.86$, df = 1, $p < 0.001$). However, the small numbers involved suggests that the prospect of inheriting offspring from a previous relationship was not an overriding consideration in mate choice.

Finally, Table 5 suggests that, on average, (a) males offered about as many traits as they sought while females sought more traits than they offered and (b) females sought more traits than men did, while offering slightly fewer traits than men, thus supporting prediction (A6). In particular, a significantly higher proportion of women (43% of 416 advertisers)

TABLE 2. Frequencies with which men and women mentioned cues of physical attractiveness in their advertisements

	Percentage of advertisers			
	Offering attractiveness		Seeking attractiveness	
	Men	Women	Men	Women
Willamette Week	42.0	61.3	54.3	26.
Sun/Examiner	28.3	46.9	38.2	17.6
Nickel Ads	26.6	34.6	43.8	17.3
Overall	34.4	49.5	44.4	22.3
Sample size	480	416	480	402

TABLE 3. Frequencies with which men and women mentioned monogamous relationships in their advertisement

	Number of advertisements mentioning mongamy		
	Seeks	Offers	Total sample
Men	20 (4.2%)	16 (3.3%)	480
Women	24 (5.8%)	13 (3.1%)	416

Source: *Willamette Week, Sun/Examiner, Nickel Ads.*

TABLE 4. Frequencies with which men and women mentioned children from previous relationships in their advertisements

	Number of advertisements mentioning children			
	Accepting	Refusing	Total	Total sample
Men	38	27	65	480
Women	4	1	5	416

Source: as for Table 3.

sought cues associated with family commitment than did males (23% of 480 advertisers) ($\chi^2 = 41.2$, df = 1, $p < 0.001$: see also Fig. 5b). In contrast, offers of family commitment cues did not differ between the sexes (males: 29%; women: 28%).

On balance, these results suggest that our sample is fairly typical of natural human behaviour. However, predictions (A4) and (A5) received little support. Neither men nor women seemed to be particularly concerned about either the sexual fidelity of prospective mates or the risk that they might have children from a previous relationship, despite the implied risks of genetic altruism through helping to rear another individ-

ual's offspring. This willingness to help rear someone else's child(ren) appears to be in line with Buss's (1989) finding that concern over sexual fidelity is much reduced in western industrialised cultures compared to more traditional societies.

There are several reasons why advertisers may be less concerned about rearing children other than their own. One is that the costs of rearing someone else's children are not as great in post-industrial societies as they are in more traditional economies. Another is that willingness to accept children from another relationship may be a small price to pay for access to the partner's future reproductive potential or resources (see also below). A third possibility is that advertisers are simply leaving their options open: by refusing to accept previous children at the outset, the advertiser inevitably forecloses on his/her options prematurely. A better strategy might be to postpone this particular decision until it can be balanced against other considerations in order to maximise the number of replies received.

One explanation for the striking difference between the sexes in the frequency with which family commitment was sought (Table 5) may be that women are trying to avoid overly aggressive males who might pose a threat both to the woman herself and her children. Some support for this comes from the fact that the word 'gentle' cropped up again and again in women's advertisements; indeed, it was not unusual for women to state quite explicitly that they were looking for a non-violent man.

Contingent behaviour (predictions B1-B6).

The second set of hypotheses are concerned with conditional strategies: they ask whether the offers or demands that people make to prospective mates depend on their (relative) circumstances.

TABLE 5. Mean number of traits sought and offered by a random sample of 100 men and 100 women drawn equally from all age classes

	Mean number of traits	
	Sought	Offered
Men	2.91	2.98
Women	3.43	2.74

Source: as for Table 3.

Prediction (B1): Choosiness is contingent on age.

Figure 2 shows that women tend to seek most traits during the years of peak reproduction (20-39 years old) and to seek progressively fewer traits as they age. In contrast, men seek increasingly more traits as they age, reaching a peak in the decade 40-49 years, after which the number of traits sought declines. This is generally in line with expectations from evolutionary theory suggesting that women will be able to make most demands when their reproductive value is highest (age lowest), whereas men will be able to make most demands when the combination of earning potential and future life expectancy is highest (maximised in the decade 40-49 years). In general, women are more demanding than men in the decades of maximum fecundity (20s and 30s), then men become more demanding than women in their 40s, after which they more or less equilibrate.

The last finding might be interpreted as suggesting either that, in the oldest age groups, both men and women settle for companionship rather than reproduction or that males are less able to be so demanding in these

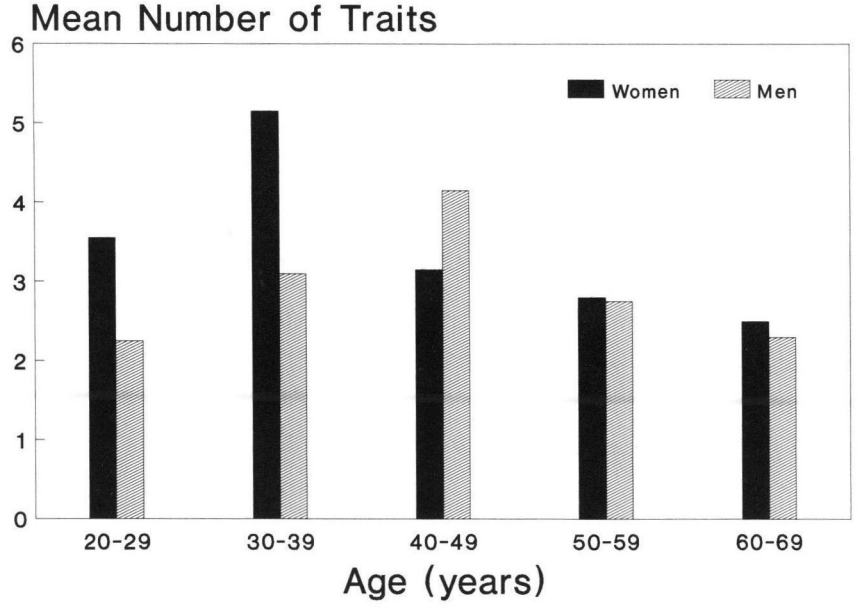

Fig. 2. Mean number of traits sought by men and women of different age classes. Source as for Fig. 1.

age groups because of their declining life expectancy. However, it should be noted that although *formal* reproduction (*i.e.* giving birth) ends at menopause (usually around 40-45 years of age), women may continue to have considerable reproductive interests that require male investment well beyond this point. Women who reproduce late are likely to have dependent offspring into their sixties; in addition, *grand*maternal interests are an important form of maternal investment during this life stage and these will continue to require male investment.

The same pattern emerges from a consideration of specific key traits. Women tended to seek resources less frequently with increasing age (with a peak in the 30-39 age bracket), whereas men tended to seek resources more often with age (Fig. 3). Men (but not women) tended to offer resources more often with increasing age (Fig. 4), though this tended to be less true of men advertising in the *Willamette Week* than in the *Sun* and *Examiner*. Both women and men offered family commitment traits with similar frequencies as they aged, and did so with increasing frequency (Fig. 5a), but demands for family commitment remained constant (Fig. 5b). In general, women tended both to offer and to demand traits indicat-

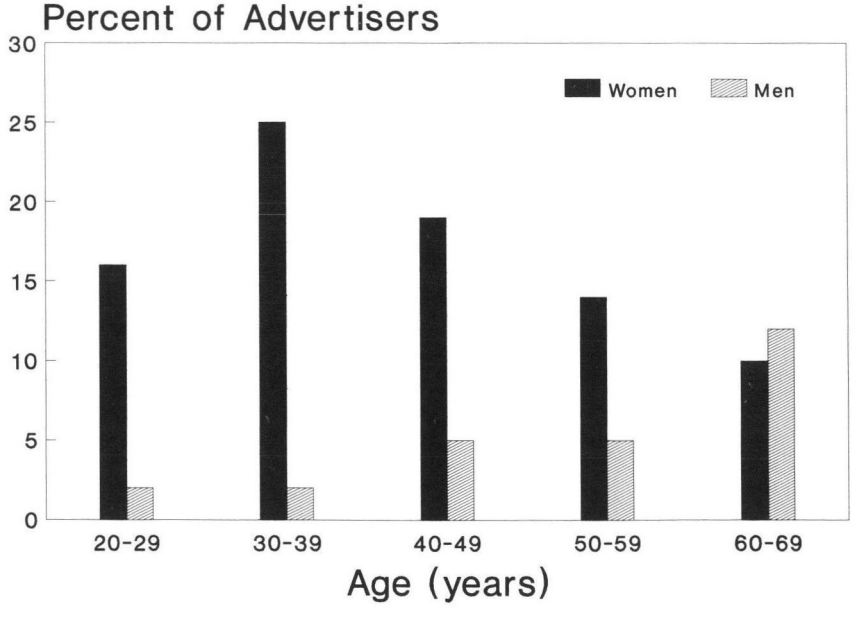

Fig. 3. Percentage of advertisers seeking resources, plotted against age. Source as a for Fig. 1.

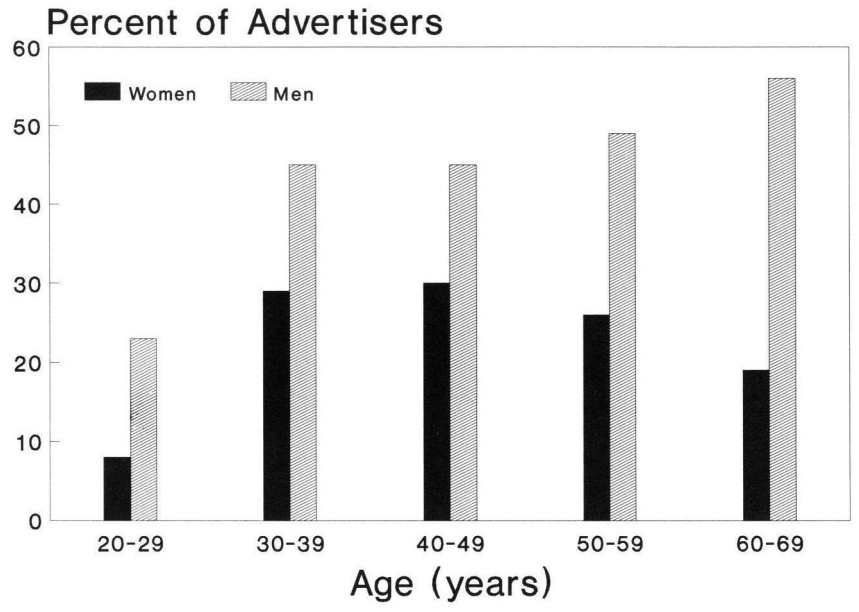

Fig. 4. Percentage of men and women of each age class that offered resources. Source as for Fig. 1.

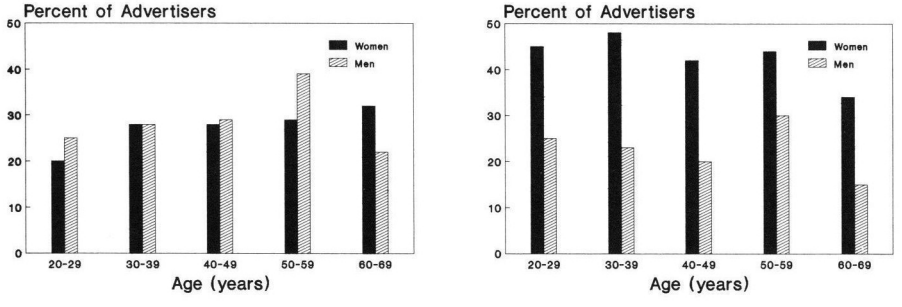

Fig. 5. Percentage of men and women advertisers (a) offering and (b) seeking cues of family commitment, plotted against age. Source as for Fig. 1.

ing physical attractiveness less frequently as they aged (women advertising in the *Willamette Week* were a striking exception to this generalisation), whereas men tended to maintain a greater consistency across the age classes in both respects (Fig. 6).

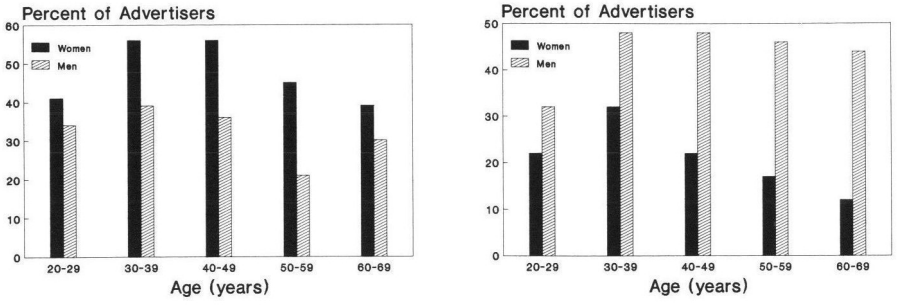

Fig. 6. Percentage of men and women advertisers (a) offering and (b) seeking cues of physical attractiveness, plotted against age. Source as for Fig. 1.

In several of the analyses that follow, we have partialled out the effects of age by considering a sample of 20 advertisers for each category drawn at random from the database, with each age class equally represented. In these cases, we controlled for variance in the level of resources on offer (for men) and physical attractiveness (for women) by selecting only individuals that offered similar levels.

Prediction (B2): Better-off women will be less interested in wealth.

Significantly more of the women advertising in the *Willamette Week* described themselves as having resources of their own (45% of 105 women) than in the *Sun/Examiner* sample (16% of 245 women; $\chi^2 = 29.25$, df = 1, $p < 0.001$), but the *Willamette Week* women were not less likely to seek resources in a potential mate ($\chi^2 = 1.00$, df = 1, $p > 0.30$). This prediction is thus not supported.

Predictions (B3-B4): Demands are contingent on attractiveness and resource availability.

Women offering physical attractiveness did make higher demands (*i.e.* sought more traits) than women not offering attractiveness in both samples (Fig. 7; *Willamette Week*: means of 5.21 *vs* 3.70 traits, respectively, Mann-Whitney test, $p < 0.05$; *Sun/Examiner*: means of 4.75 *vs* 3.40 traits, respectively, Mann-Whitney test, $p < 0.02$). In contrast, for neither sample did the number of traits sought differ significantly between men

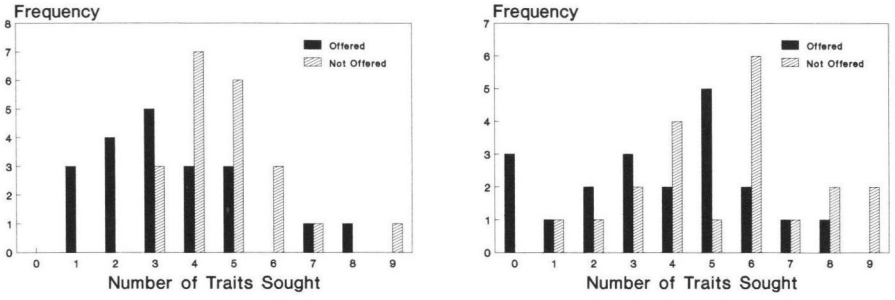

Fig. 7. Frequency distribution of number of traits sought by women who offered and those who did not offer cues of physical attractiveness, for women advertising in (a) *Sun/Examiner* and (b) *Willamette Week*. Source: 20 women in each class (offering similar levels of attractiveness) randomly selected from the database.

offering physical attractiveness and those not doing so (Mann Whitney tests, $N_1 = N_2 = 20$, $p > 0.10$). Prediction (B3) is thus confirmed.

Similarly, prediction (B4) was upheld: men offering resources made more demands (asked for more traits) than men that did not (Fig. 8; *Willamette Week*: means of 5.4 *vs* 3.85 traits; *Sun/Examiner*: means of 2.8 *vs* 2.5 traits). However, only the difference for the *Willamette Week* men was significant (Mann Whitney tests: $N_1 = N_2 = 20$, $p < 0.05$ and $p > 0.30$, respectively). In neither case, did women offering resources ask for more traits in a prospective partner than women not offering resources.

Prediction (B5): men's demands are contingent on wealth.

We predicted that individuals advertising in the *Willamette Week* (representing a wealthier readership) would ask for more traits in a prospective partner than those advertising in the *Sun/Examiner* (whose readership predominantly came from the poorer sections of society). In fact, there were no significant differences between the samples for either men or women in the total number of traits sought. There were, however, a number of significant differences in the frequencies with which individual traits were sought.

Men advertising in the *Willamette Week*, for example, specifically sought traits associated with physical attractiveness significantly more often than males advertising in the *Sun/Examiner* (for ages 20-59: $\chi^2 = 12.3$, df = 1, p

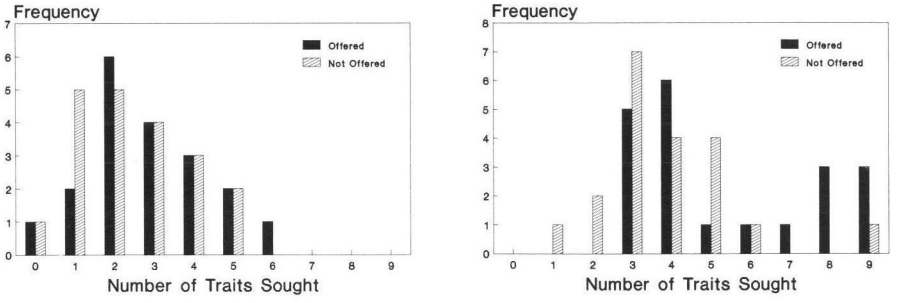

Fig. 8. Frequency distribution for number of traits sought by men who offered or those who did not offer resources, for men advertising in (a) *Sun/Examiner* and (b) *Willamette Week*. Source: 20 males in each class (offering similar levels of resource) randomly selected from the database.

< 0.001). Since attractiveness seems to be the single most important quality for males (see Buss, 1989; Grammer, 1989), this result is particularly significant. It seems that men in the higher (wealthier) social classes feel that they can command higher levels of attractiveness in their women.

On the other hand, women advertising in the *Sun/Examiner* specifically sought traits associated with family commitment significantly more often than those advertising in the *Willamette Week* (for ages 20-59: $\chi^2 = 4.0$, df = 1, $p < 0.05$). This difference is less easy to explain, unless it reflects women's attempts to avoid excessively aggressive men in those strata of society where such behaviour is more common among males.

Prediction (B6): women's demands will be contingent on children.

If men are generally reluctant to take on the burden of rearing other men's children, the impact of dependent offspring on a female advertiser's prospects will be considerable. Such women will find it more difficult to find new partners and will therefore be forced to accept mates of lower standard than they would otherwise do. Figure 9 gives the frequency distributions for the number of traits sought by women who had dependents and those who did not in the two main samples. In both cases, women with dependents asked for fewer traits in a prospective partner than women without dependents (*Willamette Week*: means of 3.9 *vs*

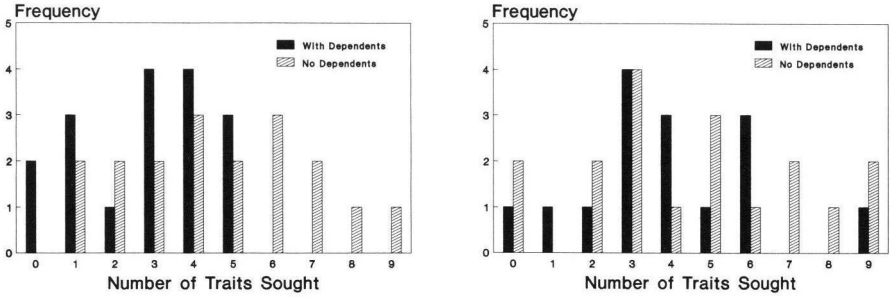

Fig. 9. Frequency distribution for number of traits sought by women with and without dependents, for women advertising in (a) *Sun/Examiner* and (b) *Willamette Week*.

4.0, respectively; *Sun/Examiner*: means of 2.8 *vs* 4.6, respectively), but only in the case of the *Sun/Examiner* sample was the difference significant (Mann-Whitney test, $p < 0.05$).

The *Willamette Week* women, however, had more to offer in terms of their own resources (45% of 105 women advertisers claimed to have resources of their own, as against just 16% of the 245 *Sun/Examiner* women; $\chi^2 = 29.25$, $df = 1$, $p < 0.001$); since this clearly offsets the cost to a partner of having to help rear someone else's child, it may explain the higher demands that *Willamette Week* women with dependents felt able to make.

This pattern was particularly evident in the frequency with which advertisers sought physical attractiveness in prospective partners: both men and women with dependents sought such traits significantly less often than those who did not mention dependents (Table 6: men, $\chi^2 = 4.54$, $df = 1$, $p < 0.05$; women, $\chi^2 = 3.30$, $df = 1$, $p \simeq 0.06$), though they were not more likely to seek resources (Table 6). The one exception to this is that both men and women with dependent children were significantly more likely to seek traits associated with family commitment than those without dependents (Table 6: men, $\chi^2 = 7.70$, $df = 1$, $p < 0.01$; women, $\chi^2 = 3.12$, $df = 1$, $p \simeq 0.07$). This can almost certainly be attributed to parents' concerns about the welfare and survival of their offspring on remarriage: there is considerable evidence from both historical and contemporary populations to suggest that young offspring living with stepparents are at significantly increased risk of mortality (Daly & Wilson, 1988; Voland, 1988).

TABLE 6. Frequencies with which men and women aged 20-49 with and without dependents sought key traits

		Number seeking trait					
		Men			Women		
Traits sought:	Dependents?	Yes	Total	%	Yes	Total	%
Resources:	no	13	396	3.3	56	267	20.6
	yes	0	28	0.0	8	41	19.5
Family commitment:	no	85	368	23.1	104	226	46.0
	yes	13	28	46.4	25	41	61.0
Physical attractiveness:	no	168	368	45.7	64	226	28.3
	yes	7	28	25.0	6	41	14.6

Source: as for Table 3.

While men were more likely than women to refuse to accept dependent children from a previous relationship, they were also significantly more likely than women to express willingness to accept such children (Table 4; for those mentioning children: $\chi^2 = 32.65$, df = 1, $p < 0.001$). Such behaviour on a male's part might reflect either of two motivations: (a) an unconditional attempt to demonstrate willingness to invest parentally (by accepting someone else's children, the male seeks to exhibit an unusually caring attitude) or (b) a conditional strategy in which a male with few resources/qualities to offer attempts to increase his chances of receiving replies. If we assume that the number of traits sought by a male is an honest assessment of his own quality (or, at least, a more honest assessment than the number of traits offered), then (a) predicts that men accepting children will not differ from men refusing children in the number of traits sought while (b) predicts that men accepting children will make fewer demands in traits sought than men refusing to accept children. A comparison of the number of qualities sought by males accepting dependents with those sought by a random sample of male *Sun/Examiner* advertisers who did not mention children suggests that the second explanation is the right one: on average, males accepting children demanded only 1.75 traits, whereas males not mentioning children in their advertisements demanded 2.84 traits (Fig. 10: Mann-Whitney test, $N_1 = N_2 = 20$, $p < 0.05$).

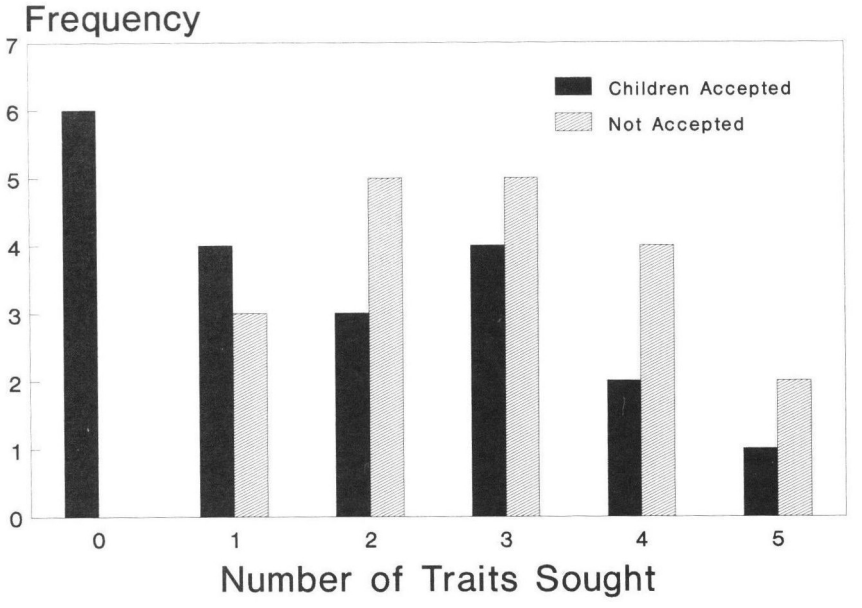

Fig. 10. Frequency distribution for number of traits sought by men welcoming children and those not mentioning children in their advertisement.

Discussion

In this study, we have shown that people behave in ways that evolutionary theory would predict, at least as far as mate-searching is concerned. It is clear that both sexual selection and parental investment theories underpin people's decisions in this respect. These results provide independent support for similar findings from other US (THIESSEN *et al.*, 1993; WIEDERMAN, 1993) and UK (GREENLEES & MCGREW, 1994) 'Lonely Hearts' datasets.

More importantly, perhaps, we have also shown that individuals will modify the demands they make of potential partners in the light of their own circumstances: mate choice decisions are, in other words, contingent on how well an individual can expect to do in competition for members of the opposite sex. We can say little, on the basis of this study, about the frequency-dependent aspects of these decisions; at worst, however, individuals must be assessing their chances of success in the light of what they perceive to be a general population average. In this respect, our results support the argument by SMUTS (1991a,b) and others for the context-

dependency of people's behavioural strategies against those who have argued that such aspects as resource-seeking by women are evolved adaptations that occur universally among humans, irrespective of culture or ecological context.

These results suggest that the processes of mate selection involves a good deal of bargaining in which different components may be traded against each other. This much is, of course, abundantly clear from the protracted negotiations that have been documented in bridewealth settlements, but courtship itself has also been likened to a process of negotiation (GRAMMER, 1989). In social psychology, exchange theory has been an important basis for explaining human courtship behaviour. This has argued that mate choice is largely concerned with attempts to match the social and economic attributes of prospective partners (see for example GOFFMAN, 1952; BYRNE, 1971; CRITELLI & WARD; 1981, ANTILL, 1983). Our results suggest that this is only partly true: as evolutionary biologists have long recognised, frequency-dependent effects can often lead to individuals adjusting their strategies at a phenotypic level to take account of the actual (or perceived) competition. As KENRICK & KEEFE (1992) and others have commented, evolutionary theory introduces a new dimension into the study of human social behaviour that makes it possible to explain some features that exchange theory and other conventional social psychology theories have had difficulty explaining. Among these are males' persistent preference for females of optimal reproductive age and women's interest in males that can offer them significant resourcing or other forms of direct parental investment (for example, the fact that very rich elderly men are able to attract young women at the peak of fertility).

Social psychologists (not to mention other social and, occasionally, even biological scientists) are commonly reluctant to accept evolutionary explanations for human behaviour (usually because they misinterpret them as implying some kind of naive genetic determinism). In order to avoid accepting the implications of the empirical evidence in these cases, their conventional response is to challenge the validity of the data.

Three criticisms have commonly been made of analyses that have used questionaires (see commentaries in BUSS, 1989) and 'lonely hearts' columns (see commentaries in KENRICK & KEEFE, 1992). One is that respondents' statements about the traits they seek in partners need bear no relationship to those of the individuals with whom they actually pairbond

(and thus presumably reproduce). The second is that advertisers (like those who fill in questionaires) often lie about themselves. The third is that people who advertise in 'lonely hearts' columns are by definition those who have been unsuccessful in the more conventional mating arena and are thus not representative of the population at large. Indeed, on the basis of clinical interviews, DARDEN & KOSKI (1988) concluded that advertising in 'lonely hearts' columns was a deviant activity, while subsequent research has shown that only a very small proportion of couples meet through dating services of this kind (see HOWARD & ZEMEN, 1991).

The first objection can be dealt with in two ways. One is to point out that we are here concerned with what individuals would *like* to achieve in an ideal world: these presumably set the standards by which they then judge prospective mates when deciding whether or not to form a more permanent relationship. No organism can expect to achieve its ideal in this respect, if only because frequency-dependent processes will force many individuals to choose between pairing with a less than optimal partner and not pairing at all. Since the latter is an evolutionarily absurd choice, we should not be surprised to find that actual behaviour does not always match up to the ideal. Indeed, studies of animal mate-choice behaviour have repeatedly emphasised this point (*e.g.* JANETOS, 1980). Nonetheless, the ideals that individuals aspire to necessarily form an important part of the evolutionary process. Secondly, a number of studies have suggested that, despite the constraints imposed by frequency-dependence, humans do manage to match their chosen mates to their ideals surprisingly well. KENRICK & KEEFE (1992), for example, compared the actual ages of spouses in marriages registered in two USA cities (Seattle, Washington, and Phoenix, Arizona) with those sought by advertisers in 'lonely hearts' columns and found a convincing match between the two. Moreover, a comparison of advertisements from Holland, Germany and India suggested that the expressed preferences are fairly universal, as are the actual age differences in contracted marriages (as indicated by a sample of US marriages registered in 1923 and a sample of marriages registered on the island of Poro in the Phillipines between 1913-1939).

The second criticism (that those who resort to personal ads often lie about themselves) has some foundation: respondents frequently write to newspaper and magazine editors complaining about advertisers who failed to match up to their stated claims. However, our concern is not so

much with what individuals are *actually* like but with their perceptions of themselves, since it is these that will determine the level of bargaining for traits that they will be willing to risk. In any case, presumably their statements about the traits they would prefer in a partner are honest.

The third criticism (that 'lonely hearts' advertisers are atypical, even abnormal) is more difficult to circumvent, since it is almost certainly true to some extent. However, the fact that KENRICK & KEEFE (1992) found such a good match between what advertisers asked for and what people in general actually achieved tends to undermine the force of this criticism. A more forceful counter to this argument has been made by both IRONS (1989) and RAJECKI & RASMUSSEN (1992): they have argued that the fact that the behaviour of individuals in such samples so closely matches the predictions of evolutionary theory despite their supposed deviance itself speaks strongly in favour of the underlying theory. It would be difficult to justify the claim that social deviants and misfits behaved in accordance with evolutionary theory when 'normal' people might not, given the conventional expectation that deviant behaviour normally produces randomised or extreme responses. More importantly, perhaps, PEARCE (1982) found that only 13% of women and 19% of men complained that *any* of the respondents to their advertisements were social misfits or in any way psychologically disturbed. It is clear from PEARCE's (1982) study that, whatever may have been the case in the past, advertising in 'Lonely Hearts' columns is now being seen increasingly as a valuable way of finding potential mates for those whose social world has been artificially constrained by contemporary urban life and the demands of modern employment practices. Many of those in PEARCE's sample expressed considerable satisfaction over their experiences in using 'Lonely Hearts' columns.

Finally, two findings from this study were unexpected and require further comment. One was the fact that the youngest age group (20-29 year-olds) often behaved in a manner that was atypical of the rest of the population. Thus, they commonly scored lower than expected on the numbers of qualities sought and offered, especially in the women's sample (see Figs. 3 and 7). Since this has not been noted in other studies (*e.g.* that by HARRISON & SAEED, 1977), it is possible that the present sample is somewhat biased. One obvious source of bias is the fact that the younger age classes tend to have more opportunities for social contact with mem-

bers of the opposite sex, and will thus be less dependent on dating services of this kind; consequently, only those who have been less successful socially will resort to advertising. This is likely to be especially true of the *Willamette Week* readership since the paper is widely read on Portland college campuses. That this is a possibility is suggested by the fact that the 20-29 age class is particularly poorly represented in the women's sample (less so in the men's). If only those individuals with low self-esteem and/or few traits to offer resort to 'lonely hearts' columns, this would explain why this age group sought resources and offered physical attractiveness consistently less often than the 30-39 year-olds. Unfortunately, we have no way of checking this explanation but it merits further investigation.

The second finding of note was the extent to which the women in the present sample placed a greater emphasis on seeking cues of family commitment in preference to resources. Among 20-59 year-olds, women sought cues of family commitment significantly more often than they did cues of resource availability or future financial prospects ($\chi^2 = 49.3$, df = 1, $p < 0.001$). Studies of more traditional societies have tended to emphasise the importance of men's wealth or status as the features that have the greatest impact on women's fitness and that are often actively selected for by women (or their families) in choosing husbands (*e.g.* HILL & KAPLAN, 1988; BORGERHOFF MULDER, 1989; VOLAND & ENGEL, 1990). The fact that in modern societies more weight may be given to family commitment may reflect an important shift in the general economic conditions of most western societies compared to more traditional economies. The greater wealth typical of post-industrial societies and the fact that this wealth is more evenly distributed may have reduced the importance of the male's resource base as a factor determining variance in women's lifetime reproductive success. Instead, direct investment in parenting and/or the willingness to provide a stable family environment may have become more important. Some evidence to support this suggestion comes from a study of middle class women in Los Angeles by ESSOCK-VITALE & MCGUIRE (1988): they found that a woman's reproductive success was directly correlated with the stability of her marriage (as well as her psychological history). Similarly, in a study of working class households in Newcastle-upon-Tyne, SPENCE *et al.* (1954) found that infant morbidity was inversely correlated with the stability of family relations (and a suite of variables linked to this). More generally, it is widely recognised that single parent

families experience higher rates of child morbidity and mortality than two-parent families. In the light of this, women in post-industrial societies may have actively shifted their conception of an ideal partner from one capable of providing economic stability to one willing to provide a more stable home life. If so, this emphasises both the relative speed at which changes in behaviour can occur in cognitively advanced species like humans and the extent to which individuals are able to fine-tune their behaviour to changes in their social and economic circumstances.

Of particular interest in this respect, is the suggestion that the men (in this sample, at least) do not seem to have caught up with the women's current demands, and are thus, in general, behaving sub-optimally. This is evident from the extent to which cues of family commitment far outweigh cues for resources in women's advertisements: when the data are separated by age and sample, the percentage of women seeking family commitment is larger than the percentage seeking resources in 14/14 cases (with each age cohort of each newspaper treated as a separate sample: Sign test, $p < 0.001$; compare Figs. 3 and 5b). Yet, in the men's advertisements (compare Figs. 4 and 5a), males offered cues of family commitment more often than they offered resources in just three of 11 comparisons (Sign test: $p = 0.058$ two-tailed). Given this, we might anticipate a gradual shift in male advertisement strategies with time. In the meantime, the obvious question to ask is whether males who offer traits more appropriate to women's current needs are more successful in eliciting replies and/or forming relationships. Unfortunately, the relevant information is not available for the present dataset.

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